(b) Remarks:

In the Advisory Action in the subject application mailed December 22, 2008, the Examiner, in the Continuation of Box 11, requested that the same technique of determining the local period structure of Applicants' film using x-ray analysis should be utilized in Besson's mesoporous film to determine how the symmetry of the Besson film compared to Applicants' mesoporous film. Further, the Examiner noted if the Applicants show their structure is different from Besson, then it would be argued that the polyimide film on the substrate used by Applicants would have an effect on crystal growth (pore formation) different from the glass substrate of the prior art and that the claims may have to be revised to reflect the difference in substrates. Applicants would like to respond to the Examiner's arguments to show that the symmetry of the Besson film is different from the claimed mesoporous film and that the particular substrate selected is not critical to the mesostructured film.

The mesoporous silica film reported in the article by Besson et al. consists of multiple domains, which are oriented randomly in the plane of the film. The size of each domain is from about 100-200 nm, which is far below the size of an X-ray beam spot on the sample film. In this respect, the Besson's film is considered as "polycrystalline" mesoporous silica film. Therefore, each spot of X-ray diffraction (XRD) analysis contains many randomly oriented domains. Each domain, however, had 6-fold symmetry in the plane of the film, and, therefore, a similar XRD pattern to that in the present application could be obtained, if one could measure only a single domain. However, this is impossible because the x-ray beam spot covers multiple domains. In the inventive film, the in-plane arrangement of the spherical pores is strictly controlled, and can be regarded as a "single-crystalline" mesoporous structure. Therefore, the same technique using x-ray analysis is used to determine the Besson film structure and the instant mesoporous film structure. However, since the present film is single crystal,

measurement of its structure is simplified. Because the Besson film is not single crystal, but is polycrystalline, many domains are covered by the x-ray spot. However, each domain had 6-fold symmetry, locally, but the domains are randomly aligned in the film and are not symmetric mirror planes aligned in the same direction.

With regard to the effect of a substrate on the film, as the Examiner points out, the controlled structure in the plane of the film is provided by the rubbing-treated polyimide coating on a non-specific substrate. The fine control of in-plane arrangement of mesopores is achieved by the presence of the polymer coating. The substrate surface needs to have a surface treatment to direct epitaxial growth of the mesoporous structure. However, once formed, the polyimide coating is removed completely during the calcination process (550°C, 10H) when the surfactant is removed from the film. The complete removal of the organic components, including the polyimide film, is confirmed by direct analysis, such as infrared (IR) spectroscopy.

When the IR spectrum of the mesoporous silica film sample is measured, the silica film is formed directly on a silicon substrate, which is transparent in the IR region, and the spectrum is recorded under the transmission geometry. Therefore, the IR spectrum gives information on the mesoporous silica film and the substrate. As disclosed in the specification, the mesostructured film contains no organic component, which proves that the polyimide film is completely removed. When the intermediate polyimide film is removed, the mesostructured film does not peel from the substrate, because under the slow calcination conditions disclosed in the subject application, the mesoporous silica film is directly formed on the non-specific substrate. The wall of the mesostructure is inorganic and, therefore, the in-plane arrangement of the mesopores is hardly influenced by the thermal treatment.

Certainly mesoporous silica film having a somewhat different porous structure can be formed on the same polyimide intermediate film employing a rubbing treatment. The

structure of the silica film is determined by the preparation conditions of mesoporous silica film. The mesoporous structure is formed through self-assembly of surfactant. It is known that the surfactant can form a lyotropic liquid crystal in the presence of water, and the phase is dependent on concentration and temperature. The structure of mesoporous silica is also somewhat dependent on the conditions of the preparation. Changing the surfactant species and/or conditions, such as concentration and temperature, can lead to a mesoporous silica film of spherical mesopores, wherein the in-plane arrangement of the pores is fully controlled on the substrate. However, as described above, the rubbing-treated polyimide coating, which provides for control of in-plane arrangement of the mesopores, is completely removed during the calcination process along with the surfactant, leaving the mesoporous silica film with a controlled in-plane pore orientation directly on a non-specific substrate. Therefore, the substrate does not have any significant effect on the pore formation. It is the surface treatment on the substrate, which can be a polyimide film or the like which effects pore formation. The surface film is removed by calcination. Thereby a non-specific substrate can be employed.

Applicants are contemplating filing a Rule 132 Declaration to more completely respond to the Examiner's position and have petitioned for a 3 month suspension of prosecution for that purpose.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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